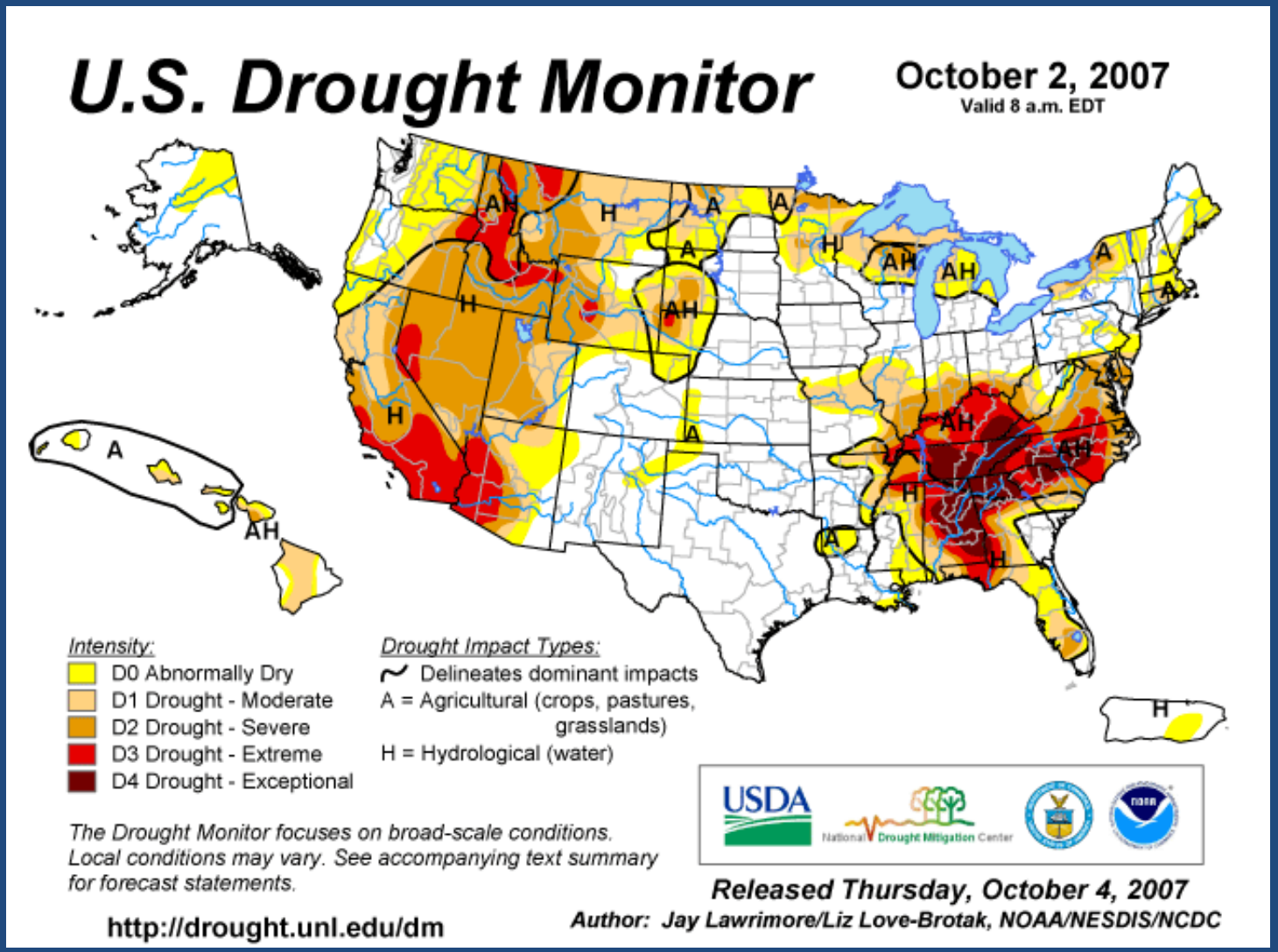
GUIDANCE FOR DEVELOPING COMMUNITY WATER SYSTEM DROUGHT MANAGEMENT PLANS

February 8, 2010

Division of Water Supply
Lee Keck, EM2

Why new guidance for developing drought management plans?

- Requires more detailed planning
- Questions status quo conditions
- Greater coordination
- More emphasis on implementation


U.S. Drought Monitor
October 2, 2007
Valid 8 a.m. EDT
Intensity:
D0 Abnormally Dry
D1 Drought - Moderate
D2 Drought - Severe
D3 Drought - Extreme
D4 Drought - Exceptional
Drought Impact Types:
Delineates dominant impacts
A = Agricultural (crops, pastures, grasslands)
H = Hydrological (water)
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.
http://drought.unl.edu/dm
USDA
National Drought Mitigation Center
Released Thursday, October 4, 2007
Author: Jay Lawrimore/Liz Love-Brotak, NOAA/NESDIS/NCDC

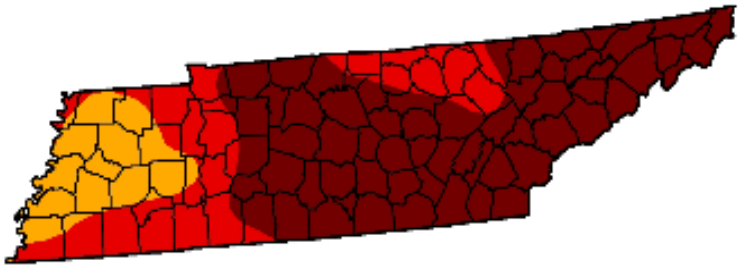
U.S. Drought Monitor

Tennessee

October 9, 2007
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.0	100.0	100.0	100.0	85.7	61.3
Last Week (10/02/2007 map)	0.0	100.0	100.0	100.0	85.7	61.3
3 Months Ago (07/17/2007 map)	0.0	100.0	99.2	93.9	56.6	5.7
Start of Calendar Year (01/02/2007 map)	37.7	62.3	0.0	0.0	0.0	0.0
Start of Water Year (10/02/2007 map)	0.0	100.0	100.0	100.0	85.7	61.3
One Year Ago (10/10/2006 map)	34.7	65.3	0.0	0.0	0.0	0.0



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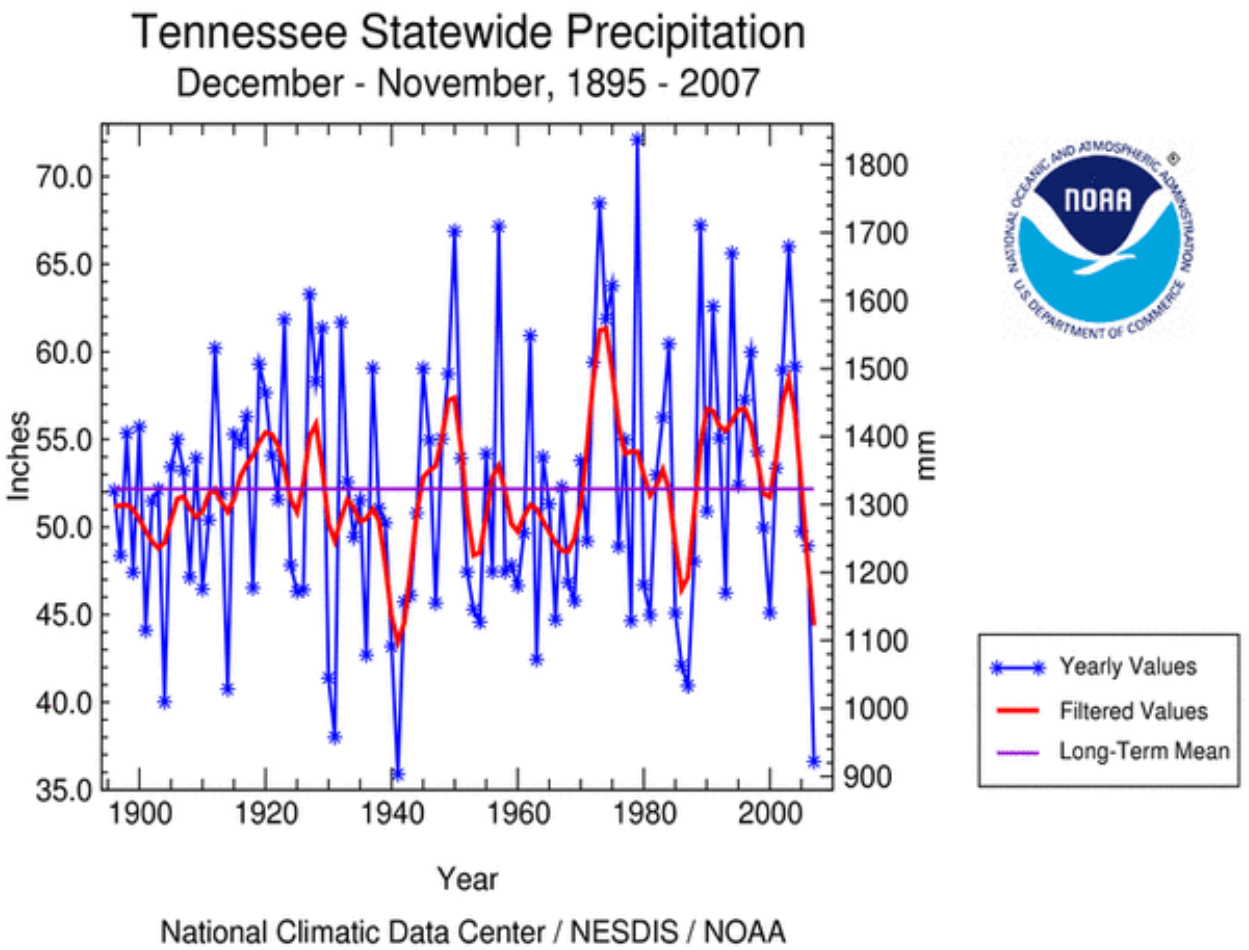
Released Thursday, October 11, 2007

Author: J. Lawrimore/L. Love-Brotak, NOAA/NESDIS/NCDC

Worst in 60 Years…



Local Drought Management Plans Are Developed within Context of State Drought Management Plan

The Tennessee Department of Environment and Conservation released its Drought Management Plan in February 2009

It can be downloaded at:

- http://www.state.tn.us/environment/dws/pdf/droughtmgtplan.pdf

TDEC Drought Management Plan

Normandy Lake
Fall of 2007

Drought Management Plans

1988 Plan was developed in response to the 1987 drought

2007-08 was the drought of record for parts of Tennessee - 28 TN Counties declared disaster areas

February 2009 – Tennessee Drought Management Plan

Overall Goals and Objectives of the State Plan

Maximize the ability of our water resources to support all of their uses during a drought

Minimize the effect of drought through effective management, proper planning and responsiveness

Objectives:

1) **Outline TDEC's role during drought**

2) **Facilitate planning**

3) **Provide a framework for response among local, state and federal agencies**

TDEC's Role in Drought Management

(1) Determine Drought Intensity

(2) Communicate Drought Information

(3) Manage Wastewater Discharges

(4) Require Development of Community Water Systems' Drought Management Plans

(5) Provide Guidance on Community Water Systems' Drought Management Plans

TDEC's Role in Drought Management (Cont'd)

(6) Encourage Regional Water Resources Management Planning

(7) Monitor Drought Impacts to WQ, CWSs

(8) Provide technical assistance

(9) Provide regulatory oversight

(10) Communicate with other agencies (Governor's Task Force)

Key Organizations

TDEC – DWQC and DWS
County and Municipal Government
Tennessee Emergency Management Agency (TEMA)
Department of Agriculture
Tennessee Wildlife Resources Agency (TWRA)
Department of Transportation (TDOT)
Tennessee Advisory Commission on Intergovernmental Relations (TACIR)
NOAA National Weather Service (NOAA)
Tennessee Valley Authority (TVA)
Army Corps of Engineers (ACOE)

Community Water Systems - Role

- Develop local drought management plans
- Assess available resources
- Identify planned responses
- Identify risks, priority customers
- Address All uses
- Communicate with the public
- Report conflicts

TDEC Drought Management Plan

Framework for Action and Coordination

Guidance for Local Community Water System Drought Management Plans

Management Strategies for Individual Suppliers

Guidance for Developing Community Water System Drought Management Plans

Drought Mitigating Rules

Guidance builds on existing rules:

1200-5-1-.05(9) – Interconnections between systems

1200-5-1-.05(10) – Expansion at 80% of design capacity

1200-5-1-.17(7) – EOP (Emergency Operations Plan) requirement

1200-5-1-.17(9) - Minimum 20 psi pressure

1200-5-1-.17(14) – 24 hours of storage

What Was Missing?
What Is Needed?

- State Mandated , Drought Specific Plans – Guidance, Rules, Policy, Evaluative Tools

- Updated Drought Management Plans - Current drought management plans are not evaluated according to established minimum requirements
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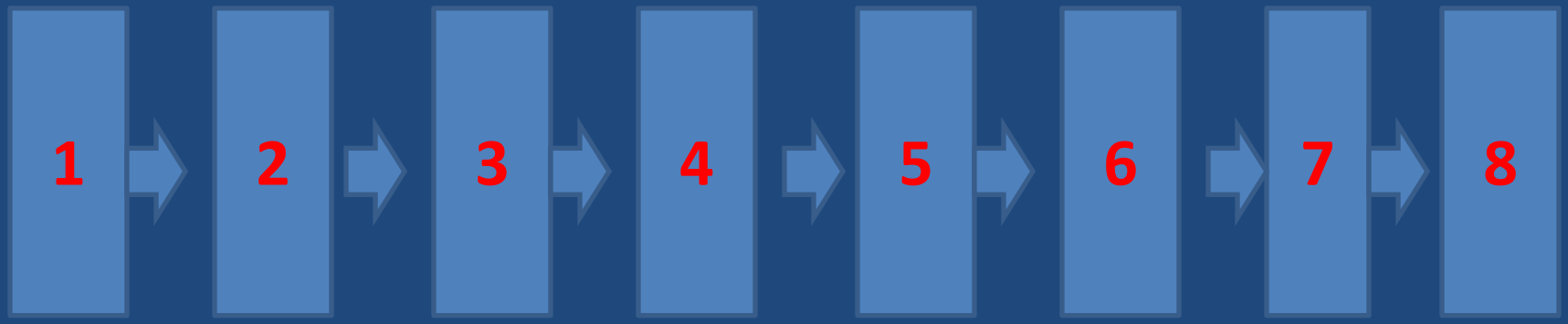
- Drought Plans That Lead to Proactive Planning and & Capital Improvements Budgets - Storage, Pump Stations, Line Sizes, *etc*

A Drought Management Planning Guide that…

- Provides clear steps to developing a reasonable and workable plan
- Provides illustrative examples
- Establishes minimum standards or criteria and includes a checklist

8 Steps in Developing a Management Plan



The 8 Steps

Step	Action
1	Preplanning
2	Organize the Process
3	Identify Existing Plans, Partnerships, Policies and Procedures
4	Coordinate with State and Regional Agencies
5	Plan the Management Phase Responses
6	Plan for Implementation – Monitoring, Detection and Triggerpoints
7	Identify the Management Team
8	Review, Evaluate and Up-date the Management Plan

The 8 Steps

Step 1 – Preplanning

* Authority and Status to Plan (Municipal Charter, UD By-laws)

* System Characteristics and Risks (Sources, Customers and Water Usage Patterns, Water Treatment Facilities, Tanks, Reservoirs, Line Sizes, etc.)

The 8 Steps

Step 2 – Organizing Planning Process

* Determine who will lead the process (Committee, Task Force, System Manager)

* Establish goals and priorities

* Establish specific steps and timetable for the process

* Establish how public input and feedback will be obtained

The 8 Steps

Step 3 – Identify Existing Plans, Partnerships, Policies, and Procedures

* Review existing Emergency Operations Plan (EOP), current issues and unmet needs

* Identify current interconnections, mutual aid agreements and backup sources

* Identify and review existing ordinances, policies and legal agreement which place constraints or demands on the system

The 8 Steps

Step 4 – Coordinate with State and Regional Agencies (Resource Agencies)

* Identify Regional Considerations and Stakeholders (Non-potable users such as agricultural , Aquatic Habitat, Temperature such as thermoelectric power generation, Navigation, Water Quality concerns, etc.)

* TVA, ACOE, USFWS, DAG, TDEC, etc.

* Clarify and Resolve any Limiting Factors (Reservoir operating curves, NPDES permits, etc.)

The 8 Steps

Step 5 – Plan Management Phases - trigger points and responses (Alert, Voluntary Reductions, Mandatory Restrictions, Emergency Management)

* Identify Water Uses (Essential Uses, Fire, Economically Important, Non-essential)

* Identify Management Phases and Measures that will accomplish water use reductions

* Identify Management Phase trigger points (Consider source characteristics, contract limitations, Hydraulic limitations, Water Quality Issues)

* Balance Supply and Demand for each phase

Community Water System Drought Phases (an example)

Program Phase and Conditions	Goal	Triggerpoints	CWS Actions
		Public Water Suppliers	
Normal Conditions • Water supply is adequate; water quality is acceptable under normal management	• None	• None	• Develop Emergency Water Management Plans • Develop additional storage and treatment facilities; evaluate distribution system • Adopt standby rates, other necessary ordinances and codes and establish mutual aid agreement, interconnections, conservation education, etc.
Drought Alert • Lower than normal precipitation, declining streamflows and lower groundwater levels; greater than normal demand	• None	• D0 or D1 US Drought Monitor Classification (Abnormally Dry or Moderate Drought)	• Monitor water sources and daily water use for specific purposes and anticipate user demand
Voluntary Reductions • Water suppliers/water quality deteriorating or conflicts among users	• 7 percent reduction	• 90-day supply (reservoir)	• Implement "Reductions" phase at plan triggering point(s). Potential water use reduction measures include curtailment of outside uses, education and pricing • If reduction goal is not obtained, implement mandatory restrictions • Notify TDEC of source conflicts

Community Water System Drought Phases (an example)

Mandatory Restrictions • Continued decline in water supply and/or water quality	• 17 percent reduction	• 60-day supply (reservoir)	• Implement "Mandatory Restrictions" phase at plan triggerpoints; restrictions could include banning of some outdoor water uses, per capita quotas and percent reductions of non-residential users • Notify TDEC of source conflicts
Emergency Management • Severe water supply or water quality problems due to very limited resource availability	• 30 percent reduction	• 7-day supply (reservoir)	• Notify TEMA and request emergency declaration • Provide bottled water and sanitation suppliers to users • Make hospitals, firefighting, etc. priority • Initiate hauling of water • Comply with Commissioner's Orders

The 8 Steps

Step 6 – Plan for Implementation (Monitoring, Plan Activation, Compliance, etc.)

* Determine how the plan will be activated and implemented

* How will system monitor supply (trigger points)

* How will system monitor demand (water use category, geographic area, time of day)

* Public Notification (Plan Activation)

* How will system achieve compliance and what enforcement measures will it use

* Adopt the plan - formally adoption of the plan by the governing body so that it is enforceable

The 8 Steps

Step 7 – Identify Management Team and Their Functions

* Establish a Management Team (who provides overall management and who makes decisions)
* What is the structure of team (PR, Monitoring, acquisition of equipment, etc.)
* What are their roles and functions
* When and how is the team activated
* Records and Documentation
* Deactivation

The 8 Steps

Step 8 – Review, Evaluate and Update Plan

* Evaluation after implementation

* Update the plan (at least every 3 years)

In about a month the DWS will be conducting a drought management workshop for water systems. Guidance for Developing Community Water System Drought Management Plans is available at:

http://tn.gov/environment/dws/pdf/droughtmgtplan.pdf

The guide will be the basis for the workshop.